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DOI:

[10.1037/sgd0000237](https://doi.org/10.1037/sgd0000237)

*Document Version*

Peer reviewed version

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*Citation for published version (APA):*

Timmins, L., Rimes, K. A., & Rahman, Q. (2017). Minority stressors and psychological distress in transgender individuals. *Psychology of Sexual Orientation and Gender Diversity*, 4(3), 328-340.  
<https://doi.org/10.1037/sgd0000237>

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## Minority Stressors and Psychological Distress in Transgender Individuals

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The authors wish to thank Dr. Sam Norton and Dr. Silia Vitoratou, who each independently assisted with the statistical analyses.

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### **Abstract**

This study tested direct and indirect associations between minority stressors and psychological distress a large, geographically diverse sample of transgender individuals ( $N = 1,207$ ). Transgender individuals were recruited for an online, cross-sectional survey using targeted sampling. Structural equation modelling was used to test the hypothesized model, which was based on Hatzenbuehler's (2009) integrative mediation framework. Expectations of rejection, self-stigma and prejudice events were all associated with psychological distress, and these relationships were partially accounted for by rumination. This model had good fit ( $TLI = .96$ ,  $CFI = .98$ ,  $RMSEA = .05$  (90% CI [.05, .06]) and explained 54.5% of the variance in psychological distress and 29.3% in rumination. This is the first study to examine a model of minority stress and psychological distress that includes rumination and all four minority stressors from Meyer's (2003) framework in a large sample of transgender individuals. Results indicate a strong relationship between minority stressors and psychological distress among transgender people, and that these relationships are partially explained by rumination. Results need to be considered in relation to the cross-sectional nature of the design and the possible role for additional variables. Future research should investigate these findings using designs that provide tests of causality.

*Keywords:* gender dysphoria, transgender, transsexual, minority stress, rumination

*Public Significance Statement:* The psychosocial processes by which prejudice may impact upon psychological distress among transgender people is tested here. Our results point to rumination, expectations of rejection and internalized stigma as possible targets for future interventions.

## Introduction

Transgender individuals are those whose gender identity or gender role is incongruent with the sex that they were assigned at birth (American Psychological Association, 2015). This can be either the “opposite gender” or one outside of the traditional binary of male and female (Richards et al., 2016). Emerging evidence suggests that members of this community are at significantly higher risk of common internalizing disorders relative to the general population (Dhejne, Van Vlerken, Heylens, & Arcelus, 2016). This is an important public health issue, given that as many as 0.6% of adults are transgender (Flores, Herman, Gates, & Brown, 2016). Despite this, attention is only starting to be paid to the mental health concerns of this poorly studied and underserved minority.

Although the heightened risk of mental health issues experienced by transgender individuals may be partly due to gender dysphoria (distress originating from incongruence between one’s assigned and experienced gender), transgender individuals are also subject to a social environment characterized by anti-transgender prejudice and social stigma known as “transphobia” (Norton & Herek, 2013). This is widespread in the United States. For example, self-reported negative attitudes towards transgender individuals were even more severely unfavorable than those towards lesbians, gay men, bisexual men and bisexual women in a probability sample of American heterosexual individuals (Norton & Herek, 2013). Furthermore, many transgender individuals identify as non-heterosexual (Kuper, Nussbaum, & Mustanski, 2012) and those that do not may be misidentified as such, as traditional conceptualizations of sexual orientation do not differentiate between sex and gender in either the target of sexual attraction or the sexually attracted person themselves (van Anders, 2015). Given this, transgender individuals may be subject to a “double dose” of stigma associated with both gender

and sexual minority status. These extremely high rates of prejudice to which transgender individuals are exposed could potentially explain the added mental health burden experienced by this group.

In general, contemporary research in sexual minority mental health has been informed theoretically by Meyer's (2003) "Minority Stress" framework. Some have suggested this framework may also help explain the effects of gender-related stigma on transgender mental health, but this has not been subject to good empirical testing (Bockting, 2009; Hendricks & Testa, 2012). Minority Stress includes four processes by which stigma is theorized to cause mental health issues. These are "prejudice events," "concealment," "self-stigma" and "expectations of rejection." These latter three processes are collectively referred to as "proximal stressors" in this framework, as they constitute the minority individual's cognitive processes, self-concepts, coping mechanisms and other maladaptive behaviors. In this sense, prejudice events could be seen as the initial means by which stigma can cause distress in transgender individuals.

### **Prejudice Events and Psychological Distress**

Transgender individuals report extremely high rates of acute transphobic prejudice events, including harassment, victimization and discrimination, as well as brief and subtle low intensity transphobic events known as "microaggressions" (Badgett, 2009; Nadal, Whitman, Davis, Erazo, & Davidoff, 2016; Stotzer, 2009). Though estimates vary across studies, some have found the rates of physical assault, sexual assault and verbal abuse motivated by gender identity to be higher than 80% in convenience samples (Stotzer, 2009). Such transphobic behaviors are also rarely once off experiences; transgender individuals are often victimized repeatedly across a lifetime and some are exposed to multiple prejudice events on a daily basis,

from both strangers and known individuals (Stotzer, 2009). Simply put, transgender individuals experience prejudice events that are severe in both their frequency and intensity.

For transgender individuals, research has found associations between acute transphobic events and depression (Gamarel, Reisner, Laurenceau, Nemoto, & Operario, 2014; Nemoto, Bödeker, & Iwamoto, 2011; Testa, Habarth, Peta, Balsam, & Bockting, 2015), psychological distress (Bockting, Miner, Swinburne Romine, Hamilton, & Coleman, 2013; Breslow et al., 2015), social anxiety (Testa et al., 2015) suicidal ideation (Testa et al., 2017) and attempted suicide (Clements-Nolle, Marx, & Katz, 2006; Goldblum et al., 2012). Thus, prejudice events are a potential fundamental cause of distress in transgender people.

### **The Additional Contribution of Proximal Stressors**

As mentioned, proximal stressors include self-stigma, concealment, and expectations of rejection. “Self-stigma” refers to the process by which transgender individuals can come to internalize society’s negative attitudes (Puckett & Levitt, 2015). “Concealment” refers to the manner in which transgender individuals sometimes hide their minority status in order to avoid prejudice events (Zimman, 2009). “Expectations of rejection” describes the way transgender individuals can come to expect prejudice events and become hypervigilant (Nadal, Davidoff, Davis, & Wong, 2014). Notably, though hypervigilance and concealment may be beneficial in warding off prejudice events, they are thought to have detrimental long term effects on mental health (Hatzenbuehler, 2009; Meyer, 2003).

Studies on the relationship between proximal stressors and transgender mental health outcomes are very limited. One study on transgender women reported that higher levels of disclosure of transgender status were negatively correlated with depression and anxiety (Strain & Shuff, 2010). However, another study reported that self-reports of investment in “passing” (being

seen as a cisgender [non-transgender] member of one's gender identity) were not associated with depression in a community sample of transgender individuals (Bockting et al., 2013). This study also found that transgender individuals who expected to be stereotyped by others for being transgender had higher levels of depression. A further study found that believing that others stigmatize transgender individuals was positively associated with psychological distress, but found mixed results for gender identity self-stigma, or "internalized transphobia" (Breslow et al., 2015). More recent work found that fears of transphobic prejudice events and internalized transphobia were positively associated with depression in a convenience sample of transgender individuals (Tebbe & Moradi, 2016). A quite comprehensive study found positive bivariate relationships with depression and anxiety for each of internalized transphobia, active concealment of transgender status and expectations of rejection based on transgender status (Testa et al., 2015). Finally, a second extensive study found that these three proximal stressors were also positively associated with suicidal ideation (Testa et al., 2017). Though these studies have somewhat mixed results, the overall pattern suggests that proximal stressors are associated with distress in transgender individuals.

### **The Potential Role of Rumination**

One factor that may also be of relevance to the development of psychological distress in transgender individuals is rumination. Depressive rumination has been defined as a coping strategy in which an individual repetitively focuses on the symptoms and circumstances of their distress (Nolen-Hoeksema, 1991). A variety of studies have found that rumination is positively associated with depression and anxiety in the general population (Kirkegaard Thomsen, 2006). Prospective research suggests that "brooding," a subtype characterized by moody contemplation, positively predicts both current and future levels of depression (Treyner, Gonzalez, & Nolen-

Hoeksema, 2003). Thus, rumination may play a part in the development of distress in transgender individuals. However, thus far no studies have tested the relationship between rumination and distress in this group.

### **Incorporating General Psychological Processes into Minority Stress**

Critics have made the point that, although Minority Stress research has been very helpful in identifying potentially modifiable causes of the heightened levels of psychological distress experienced by sexual minority individuals, there is a wealth of relevant research on processes experienced by the general population, such as rumination, that could potentially do the same (Diamond, 2003; Hatzenbuehler, 2009). Such authors argue that these two areas of research need to be merged in order to create a more complete picture of the process by which minority stressors cause psychopathology in sexual minority individuals. Similarly, research on gender and sexual minority stressors in transgender individuals could be enriched by examining processes experienced by the general population alongside transgender-specific factors.

Hatzenbuehler (2009) took criticism of sexual minority stress a step further than others. Pointing to the then recent explosion of research on mediation, he proposed a framework that integrated research from both areas. This integrative mediation framework proposed that stress associated with stigma activates several changes in both general psychological processes (including, but not limited to, rumination) and proximal stressors, which both in turn confer risk for psychopathology. Simply put, he hypothesized that these group-specific and general processes may mediate the relationship between prejudice events and mental health outcomes. This expansion of the Minority Stress framework has been supported by several studies on a variety of sexual minority groups (Brewster, Moradi, DeBlaere, & Velez, 2013; Feinstein, Goldfried, & Davila, 2012; Hatzenbuehler, Dovidio, Nolen-Hoeksema, & Phills, 2009; Liao,



Kashubeck-West, Weng, & Deitz, 2015; Puckett, Newcomb, Garofalo, & Mustanski, 2016; Szymanski, Dunn, & Ikizler, 2014; Szymanski & Ikizler, 2013; Velez, Moradi, & Brewster, 2013). This research has had important clinical implications, to the point that psychological interventions targeting both general and sexual minority-specific sequelae of sexual minority stigma have been developed (Pachankis, Hatzenbuehler, Rendina, Safren, & Parsons, 2015). As such, applying this concept to transgender mental health could have extensive practical and theoretical implications. Despite this, only two studies thus far have applied models based on this framework to transgender individuals (Breslow et al., 2015; Testa et al., 2017).

In the first study testing a model of transgender mental health based on Hatzenbuehler's (2009) framework, indirect effects of prejudice events on distress via gender identity stigma awareness (a form of expectations of rejection) and internalized transphobia were tested (Breslow et al., 2015). Although support for an indirect effect of prejudice events on distress via stigma awareness was found, no effect was found via self-stigma. However, this study was limited by the fact that it did not incorporate any clinically-relevant general psychological processes. A second study tested two models of suicidal ideation in transgender individuals (Testa et al., 2017). The first model examined indirect effects of prejudice events on suicidal ideation via proximal stressors and the second examined indirect effects of proximal stressors on suicidal ideation via factors from the interpersonal theory of suicide. This study found support for indirect effects of prejudice events on suicidal ideation via all three proximal stressors and indirect effects of internalized transphobia and expectations of rejection on suicidal ideation via perceived burdensomeness and thwarted belongingness. These two studies collectively suggest that lessening proximal stressors could potentially mitigate stigma-induced suicidality and

distress in transgender individuals, and doing the same to burdensomeness and thwarted belongingness could at least reduce the former.

Breslow et al.'s (2015) and Testa et al.'s (2017) studies have identified promising new areas for research and intervention development and this should be lauded. However, neither of these studies examined a general factor thought to be heavily associated with distress, such as rumination, and whether this can explain the relationship between minority stressors and distress in transgender individuals. In fact, no studies to the authors' knowledge have tested the relationship between rumination and distress in transgender individuals at all. Additionally, apart from Testa et al. (2017), none of the above-outlined studies tested a model incorporating all four stressors from Meyer's (2003) framework. Thus, there remain gaps in the literature regarding the relationships between the four minority stressors, rumination and distress.

Addressing these gaps could have significant implications. From a research perspective, determining whether these relationships exist at a cross-sectional level could inform the selection of variables for assessment in future studies utilizing more resource intensive designs that facilitate the testing of causality and temporal direction. At a more applied level, knowing the collective direct and indirect relationships between rumination, minority stressors and distress in transgender individuals would provide useful practical information on which, if any, of these variables should be primary targets for intervention when attempting to reduce stigma-induced distress in this group. Such interventions would be particularly useful. Although prejudice ultimately needs to be eliminated at a societal level to fully prevent its damaging consequences, such change can take a very long time and minority individuals currently suffering require more immediate amelioration of their distress, if possible (Hatzenbuehler, 2009). Thus, this is a worthy avenue of research.

## **Current Study**

Based on the above-outlined research, the objective of the current study was to test, for the first time, a model incorporating all four minority stressors from the Minority Stress framework and rumination, a clinically-relevant general mediator suggested in Hatzenbuehler's (2009) integrative mediation framework (see Figure 1). It was hypothesized that there would be a positive association between prejudice events and psychological distress and that this would be explained by indirect effects via active concealment, expectations of rejection and self-stigma. In turn, there would be positive relationships between each of these three proximal stressors and distress and these would be explained by indirect effects via rumination. This would culminate in the model displayed in Figure 1.

## **Method**

### **Procedure**

Participants were recruited via advertisements on online press websites aimed at the lesbian, gay, bisexual, transgender and other gender and sexual minority (LGBT+) community, posts on targeted and general internet forums, listservs, mailing lists and sections on social media sites, and snowball sampling. Participants were invited to take part as long as they were age 16 or older. Data were collected by means of an online, browser-based survey. Individuals who appeared to be giving "prank" answers (identified by antagonistic responses in open fields) were excluded from analysis ( $n = 9$ ). Cisgender participants ( $n = 5,798$ ) were analyzed in a separate study, as minority stressors are likely to be experienced differently by those individuals who are not transgender.

## Participants

Participants were considered transgender and thus included if they reported a current gender identity which differed from their reported sex assigned at birth (SAAB), in line with the two-question method (Tate, Ledbetter, & Youssef, 2013). Although some definitions of “transgender” do include crossdressing individuals and drag performers (e.g. Bockting et al., 2013), only three such individuals were present in the remaining sample. These were excluded in order to focus the research on individuals who identify as a gender other than that which they were assigned at birth. This left a total of 1,207 transgender individuals. Transgender participants were considered non-binary if they reported a gender identity that was anything other than exclusively male or female. In total, 346 participants identified as men, 377 as women, and 484 as a non-binary gender (351 were assigned female at birth and 133 were assigned male). The mean age was 28.5, with a range of 16-78. 41.9% were resident in the United States, 40.6% in the United Kingdom, 5.6% in Canada, 2.4% in the Republic of Ireland, 2.3% in Australia, 6.3% in various other Western countries and .9% in various non-Western countries. In terms of relationship status, 47.1% were single, 15.4% were steady, 10.0% were living together, 10.1% were married, 4.9% were in a casual relationship, 3.7% were separated or divorced, and 8.8% reported other relationship statuses. Regarding race/ethnicity, 89.4% were white, 5.1% were mixed race, 2.0% were Latino/Hispanic, 2.0% were Asian, .6% were black, and .9% were other races/ethnicities. Descriptive statistics and bivariate correlations can be seen in Table 1.

Transgender participants were compared to heterosexual ( $n = 1,021$ ), bisexual ( $n = 1,518$ ) and gay ( $n = 2,730$ ) cisgender individuals from the larger sample using  $t$ -tests for childhood gender nonconformity (CGN) and Mann-Whitney U-tests for gender dysphoria. Bonferroni adjustments corrected for familywise error ( $\alpha = .05/3 = .017$ ). These analyses were performed to

determine how gender identity is related to other specific relevant constructs and, in essence, validate the questions used to categorize individuals as transgender in this study. Transgender participants exhibited higher levels of both CGN and gender dysphoria than all other groups (all  $ps < .001$ ).

### **Study Measures**

Questionnaires covered demographic variables, prejudice events, active concealment of LGBT+ status, disclosure of transgender status, expectations of rejection, self-stigma, rumination and psychological distress. Cronbach's alphas, reported below, were calculated and all measures displayed acceptable internal reliability ( $\alpha > .70$ ). New measures were developed when appropriate measures could not be found (identified below). For each measure, novel items were generated based on research and theory and correlation matrices were visually inspected for collinear items ( $r > .90$ ) and overall intercorrelations between item pairs. Parallel analyses were then performed for each set of items in order to determine the likely number of factors for each new scale (Horn, 1965). Parallel analysis represents a method for determining the number of factors to retain that is both objective and highly accurate (Hayton, Allen, & Scarpello, 2004; Velicer, Eaton, & Fava, 2000). Exploratory factor analyses were performed for each set of items using principal axis factor extraction and Geomin rotation (Yates, 1987). These procedures are in line with general recommendations for EFAs (Russell, 2002). Factor loadings less than .32 were considered to be insufficiently strong to be of relevance as per Tabachnick and Fidell (2007). Cronbach's alphas were calculated to determine internal reliability and scales were considered acceptable if  $\alpha > .70$ , good if  $\alpha > .80$  and excellent if  $\alpha > .90$  (Darren & Mallery, 2003). These analyses were performed using R-Menu version 2.4 (Basto, 2015). Scale scores were then computed for each of the new measures and correlation coefficients for theoretically relevant

variables were calculated to determine whether the new scales displayed sufficient convergent and divergent validity. The new measures are available in the [supplemental materials](#).

**Demographic variables.** Participants reported their age in an open field. Participants reported their relationship status using a multiple choice question. Country of residence was recorded using a drop-down list. Due to there being different definitions of race/ethnicity cross-culturally, participants were allowed to self-define this variable in an open field. This was then categorized for descriptive (see above) and analytical purposes. Gender identity was recorded using a multiple-choice question with the options of “Man (including transgender man, ‘FtM’),” “Woman (including transgender woman, ‘FtM’),” and “Other gender identity (please specify).” SAAB was recorded using a single item which asked participants to indicate whether their SAAB, which was specified as meaning on their original birth certificate, was “Male” or “Female.” Two measures were taken to characterize the sample, the 10-item Recalled Childhood Gender Nonconformity scale (CGN; Hassan & Rahman, 2007) and a single item measure of gender dysphoria (7-point scale, “Very Uncomfortable” to “Very Comfortable” with SAAB, based on Bockting et al., 2013). A full clinical measure of gender dysphoria was not used, as such measures are typically unsuitable for non-binary transgender individuals, due to their binary conceptualization of gender, and burdensome, due to their large number of items (Hakeem, Črnčec, Asghari-Fard, Harte, & Eapen, 2016).

### **Prejudice events.**

***Harassment, Rejection, and Discrimination Scale.*** Anti-LGBT+ prejudice events were measured using a version of the Heterosexist Harassment, Rejection, and Discrimination Scale (HHRDS; Szymanski, 2006), modified to be applicable to LGBT+ individuals as whole. Participants rated the frequency with which they had experienced 14 events in the past year

because they are LGBT+ or were perceived to be on a 6-point scale ranging from 1, “The event has NEVER happened to you,” to 6, “The event happened ALMOST ALL OF THE TIME (more than 70% of the time).” Versions of this scale have displayed good validity and internal reliability for sexual minority and transgender individuals (Breslow et al., 2015; Szymanski, 2006, 2009). Cronbach’s  $\alpha = .91$  in the present study.

***Victimization.*** Lifetime experiences of anti-LGBT+ victimization were measured using an unnamed 7-item measure (D’Augelli, 2006), modified to be applicable to LGBT+ individuals as whole. Participants rated how often they had experienced a number of forms of victimization because they are LGBT+ or were perceived to be on a 4-point scale ranging from 0, “Never,” to 3, “Three or more times.” A version of this scale has shown good validity and internal reliability for sexual minority women (Lehavot & Simoni, 2011) and been used with sexual minority men, although psychometric data were not provided (D’Augelli, 2006). Cronbach’s  $\alpha = .85$  in the present study.

***Microaggressions.*** Experiences of anti-LGBT+ microaggressions in the past year were assessed using the Gender and Sexual Minority Microaggressions scale, developed for this study. Potential items were generated based on theory and qualitative research on microaggressions experienced by transgender and sexual minority individuals (Nadal et al., 2016). The final scale consisted of 12 items. The frequency with which each was experienced was rated on a 5-point scale, ranging from “Never” to “All of the Time.” Example items include “People suggesting that your sexual orientation or gender identity is just a phase, a choice or not real.” and “People asking you invasive questions because you are LGBT+ or they perceive you to be LGBT+.” This measure was highly correlated with both victimization and the HHRDS, but not to the point of

collinearity, indicating convergent and divergent validity (see Table 1). Internal reliability was good: Cronbach's  $\alpha = .85$  in the present study.

**Active concealment.** Active concealment of minority status was assessed using the Gender and Sexual Minority Presentation Management Inventory, which was developed for this study. The final scale consisted of five items. Participants indicated how often they engage in a number of strategies in order to not appear LGBT+ on a 5-point scale, ranging from "Never" to "All of the Time." Example items include "I try to control how I talk (e.g. the pitch of my voice)" and "I try to change my appearance." This measure was correlated with the other proximal stressor measures, but not to the point of collinearity, indicating convergent and divergent validity (see Table 1). Internal reliability was excellent: Cronbach's  $\alpha = .91$  in the present study

**Expectations of rejection.**

**Acceptance concerns.** Concerns over the potential of being stigmatized for being LGBT+ were measured using the acceptance concerns subscale of the Lesbian, Gay, and Bisexual Identity Scale (LGBIS; Mohr & Kendra, 2011), modified to be applicable to LGBT+ individuals as whole. Participants rated on a 6-point scale ranging from "Disagree Strongly" to "Agree Strongly" three statements on their concerns over potentially being stigmatized for being LGBT+ or perceived as such. This scale has displayed acceptable internal reliability and construct validity with sexual minority individuals (Mohr & Kendra, 2011). Cronbach's  $\alpha = .85$  in the present study.

**Vigilance for others' suspicions.** Vigilance for others' suspicions of own LGBT+ status were measured using the Vigilance for Others' Suspicions scale, developed for this study. Items were based on theoretical constructs of such vigilance in the literature (Pachankis, 2007). The



final scale consisted of three items rated on a 5-point scale ranging from “never” to “all of the time.” Example items include “I am quick to notice changes in how someone is treating me if they have reason to suspect me of being LGBT+” and “I become preoccupied with whether people suspect me of being LGBT+.” This measure was correlated with the other proximal stressor measures, particularly acceptance concerns. This was not to the point of collinearity, indicating convergent and divergent validity (see Table 1). Internal reliability was good: Cronbach’s  $\alpha = .84$  in the present study.

### **Self-stigma.**

***Sexual orientation self-stigma.*** Sexual orientation self-stigma was assessed using a version of the Revised Internalized Homophobia scale (IHP-R; Herek, Gillis, & Cogan, 2009) modified to be applicable regardless of gender identity and SAAB. Participants rated five statements on a 5-point scale ranging from “Strongly Disagree” to “Strongly Agree.” This measure has displayed good internal reliability and construct validity with sexual minority individuals (Herek et al., 2009). Cronbach’s  $\alpha = .78$  in the present study.

***Gender identity self-stigma.*** Gender identity self-stigma was measured using the Gender Identity Self-Stigma scale, developed for the current study. This was based on the original 9-item IHP-R (Herek et al., 2009). The final scale consisted of eight items rated on 5-point scale ranging from “Strongly Disagree” to “Strongly Agree.” Example items include “I feel that my gender identity is a personal shortcoming for me” and “If someone offered me the chance to change my gender identity, I would accept the chance.” This measure was correlated with the other proximal stressor measures, particularly sexual orientation self-stigma. This was not to the point of collinearity, indicating convergent and divergent validity (see Table 1). Internal reliability was good: Cronbach’s  $\alpha = .87$  in the present study.

**Rumination.** Rumination was assessed using a version of the brooding subscale of the Ruminative Responses Scale (RRS; Nolen-Hoeksema & Morrow, 1991; Treynor et al., 2003), modified to be applicable to responses to all forms of distress, rather than sadness and depression specifically. This subscale was chosen as research suggests that it predicts future increases in depression and likely represents a maladaptive form of rumination (Treynor et al., 2003). In contrast, the reflective pondering subscale predicts decreases in depression, and therefore likely represents a functional response to distress, and the remaining items have a large overlap with depression (Treynor et al., 2003). Participants were asked to rate five ruminative cognitions on a 4-point scale ranging from “Almost never” to “Almost always.” This measure has displayed good internal reliability and construct validity with individuals from the general population (Treynor et al., 2003). Cronbach’s  $\alpha = .78$  in the present study.

#### **Psychological distress.**

**Depression.** Depression over the past two weeks was assessed using the Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001; PHQ-9; Spitzer, Kroenke, & Williams, 1999). Participants indicated on a 4-point scale ranging from “Not at all” to “Nearly every day” the frequency with which they had experienced nine different symptoms. This measure has displayed good internal reliability with transgender women (Bazargan & Galvan, 2012), demonstrated good construct validity in the general population (Martin, Rief, Klaiberg, & Braehler, 2006) and is used in both research and clinical settings. Cronbach’s  $\alpha = .91$  in the present study.

**Anxiety.** Anxiety over the past two weeks was assessed using the Generalized Anxiety Disorder scale (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006). Participants indicated on a 4-point scale ranging from “Not at all” to “Nearly every day” the frequency with which they had

experienced seven different symptoms. This measure has been used with transgender individuals (Pflum, Testa, Balsam, Goldblum, & Bongar, 2015), demonstrated good construct validity and internal reliability in the general population (Löwe et al., 2008) and is used in both research and clinical settings. Cronbach's  $\alpha = .91$  in the present study.

**Well-being.** General well-being was assessed using the U.K. Office of National Statistics Well-Being measure (ONS-WB; Self, Thomas, & Randall, 2012). Participants were asked to rate four aspects of well-being on a 11-point scale ranging from “not at all” to “completely.” The items from this scale have been used in annual, nationally representative surveys in the United Kingdom since 2011. Cronbach's  $\alpha = .81$  in the present study.

### **Data Analysis**

**Missing data.** Missing data on items ranged from 0.0% - 3.5%. Individuals' scores for scales with missing items were calculated by generating a score using the mean of that individual's non-missing items. This score was then multiplied by the expected number of items in cases where the scale uses a sum score, rather than a mean score. If 20% or more items were missing, the scale data were treated as missing instead. This ensured that scores were still based on individuals' own responses where this was possible without substantially affecting reliability. Pairwise deletion was used in preliminary analyses and full maximum likelihood estimation was used in main analyses for remaining missing data.

**Main analysis.** Models were tested using Structural Equation Modelling in AMOS Version 21.0 (Arbuckle, 2012). Strict definitions of mediation require tests of temporal precedence and maintain that cross-sectional data can only test for indirect effects, rather than mediation per se (Kline, 2015). As such, this was used to test for total associations between variables and whether such relationships could be accounted for by indirect effects through

intermediary variables. A confirmatory factor analysis was performed using the variables in Figure 1 to determine the degree to which the data fit the measurement model. Error terms for manifest variables loading onto the same factor were allowed to correlate if there was both theoretical justification and significant improvement of model fit. Manifest variables were directly tested for cross loading onto other latent variables and alternative models were tested.

The direct path from prejudice events to psychological distress was initially tested. Subsequently, expectations of rejection, concealment and self-stigma were added separately to the model and the indirect paths from prejudice events to psychological distress via the newly added variables were tested. These variables were then tested simultaneously in the same manner with their error terms allowed to correlate. Rumination then was added and the indirect effects of all variables on distress via rumination were tested.

The model was then tested controlling for several variables, which were chosen as they are thought to influence both mental health and the experience of minority stressors (Bockting et al., 2013; Gamarel et al., 2014; Hendricks & Testa, 2012; Meyer, 2003; Richards et al., 2016). These consisted of age, SAAB (0 = male, 1 = female), race/ethnicity (0 = white, non-Latino, 1 = non-white or Latino), Non-binary gender identity (0 = “binary [exclusively male or female] gender identity,” 1 = “non-binary gender identity,” meaning other than exclusively male or female labels), gender dysphoria, disclosure of transgender status (four items on a 4-point scale, 1 = “Out to none,” 4 = “Out to all,” based on Meyer, Rossano, Ellis, & Bradford, 2002), country of residence (four indicator variables with “United Kingdom” as the comparison consisting of “United States/Canada,” “Australia/New Zealand,” “Other European Economic Area/Switzerland” and “other”) and relationship status (two indicator variables with single as the comparison consisting of “partnered” and “other”). Fewer indicator variables were used than

were potentially possible to avoid overburdening the model, as the inclusion of too many parameters can destabilize the results of Structural Equation Modelling (Kline, 2011).

In each model, paths that were insignificant or of weak significance ( $p > .01$ ) were deleted if doing so did not significantly weaken model fit. Significance of indirect effects was tested using Sobel tests (Sobel, 1982). Though boot-strapping methodologies are often considered the “gold-standard” test of the significance of indirect effects due to their high level of power, their Type I error rate is extremely high (Fritz, Taylor, & MacKinnon, 2012). Thus, it is recommended that a test is chosen a priori based on whether avoiding Type I or Type II error is of greater concern and that the significances of the individual paths to and from the intermediary variable are also examined (Fritz et al., 2012). Given the sample was far larger than the minimum required to achieve .80 power in a variety of appropriate tests, it was determined that the Sobel test should be chosen because of its extremely conservative nature, not despite it (Fritz & MacKinnon, 2007).

In line with general recommendations (e.g. Jackson, Gillaspy, & Purc-Stephenson, 2009) the chi-square test, an index to describe incremental fit (Comparative Fit Index [CFI] and Tucker–Lewis Index [TLI]) and a residuals-based measure (Root Mean Squared Error of Approximation [RMSEA]) were recorded. Good model fit was considered to be a CFI and TLI  $\geq .95$  and an RMSEA  $\leq .06$  (Hu & Bentler, 1999). Significance of differences in model fit were tested for nested models using chi-square difference tests and the better-fitting model was that with the lowest Akaike Information Criterion (AIC; Jackson et al., 2009).

## Results

### Measurement Model

The measurement model had a close to acceptable fit.  $\chi^2 (41) = 257.56, p < .001$ , TLI = .93, CFI = .97, RMSEA = .07 (90% CI [.06, .07]), AIC = 355.56. Testing for alternative models indicated that the error terms for the PHQ-9 and ONS-WB should be allowed to correlate, as should those for the HHRDS and Victimization. The ONS-WB has some items that may map onto depression specifically more so than anxiety (e.g. “how happy did you feel yesterday”) and so these error terms were allowed to correlate. Similarly, the HHRDS has items that may map onto of victimization (e.g. being “made fun of, picked on, pushed, shoved, hit, or threatened”) in a manner that would not be the case for microaggressions and so these error terms were allowed to correlate as well. This resulted in good model fit:  $\chi^2 (39) = 177.89, p < .001$ , TLI = .96, CFI = .98, RMSEA = .05 (90% CI [.05, .06]), AIC = 279.89. Factor loadings for indicators were all > .45.

### Transitional Models

A strong positive relationship was found between prejudice events and psychological distress in the initial model ( $\beta = .50, p < .001$ ). Indirect effects via each proximal stressor partially accounted for the path from prejudice events to psychological distress when tested separately (i.e. without controlling for each other). When all three proximal stressors were tested together, indirect effects through expectations of rejection and self-stigma partially accounted for the path from prejudice events to psychological distress. However, the path from concealment to psychological distress became negative. As both this path and the indirect effect were still significant ( $ps > .01$ ), it was retained in the model. All other  $ps$  were > .001 in each model. The

fits of all transitional models met the previously stated standards for good model fit. Direct and indirect effects can be seen in Table 2.

### **Final Structural Model**

Rumination was subsequently added to the model. The direct path from active concealment to psychological distress became non-significant and so it was deleted. Similarly, the direct path from expectations of rejection to distress also became non-significant and was deleted. Deleting these paths did not significantly affect model fit. All remaining paths were found to be significant ( $ps < .005$ ). Adding the control variables did not change the overall pattern of results. As such, in line with the principle of parsimony, these were excluded from the final model. This model had good fit:  $\chi^2(41) = 182.57, p < .001$ , TLI = .96, CFI = .98, RMSEA = .05 (90% CI [.05, .06]). It indicated that higher levels of prejudice events were associated with higher levels of expectations of rejection, active concealment and self-stigma. In turn, higher levels of prejudice events, self-stigma and expectations of rejection were associated with higher levels of rumination, and higher levels of rumination were associated with higher levels of psychological distress. However, higher levels of active concealment were associated with lower levels of rumination. There were indirect effects of prejudice events on psychological distress via the proximal stressors and indirect effects of all minority stressors on psychological distress via rumination. There were also direct paths from each of prejudice events and self-stigma to psychological distress and a direct path from prejudice events to rumination. This model explained 54.5% of the variance in psychological distress and 29.3% in rumination and can be seen in Figure 2.

## Discussion

To our knowledge, this is the largest study investigating the relationships between multiple minority stressors and mental health in transgender individuals to date, as well as the second study testing all four stressors from Meyer's (2003) framework, after Testa et al. (2017). Additionally, rumination, a clinically-relevant mediator of the relationships, was incorporated for the first time, expanding upon previous studies (Breslow et al., 2015; Testa et al., 2017). The model had strong explanatory power for psychological distress and rumination.

The results of this study support most components of the hypothesized model. Specifically, higher levels of prejudice events were associated with higher levels of self-stigma and expectations of rejection, higher levels of self-stigma and expectations of rejection were associated with greater rumination and such rumination was associated with higher levels of psychological distress. However, one discrepancy between the hypothesized model and this study's results is that the direct path from active concealment to rumination and the consequent indirect path from active concealment to psychological distress were negative in the final model. This is in contrast with an intermediary model in which the other proximal stressor variables were not included and the path from active concealment to psychological distress was positive as predicted. Notably, these results are somewhat in line with those of Testa et al. (2017). Despite finding a significant positive bivariate association between their measure of active concealment and suicidal ideation, they found no significant effects with active concealment as either the independent or intermediary variable when controlling for expectations of rejection and internalized transphobia. Collectively, these results indicate that active concealment does not have a positive relationship with distress over and above those that other minority stressors have and that there may even be ameliorative effects of hiding one's minority status on distress.



One possible explanation is that masking one's minority status could protect transgender individuals from external stressors that are not explicitly prejudicial, thus resulting in less rumination and distress (but not suicidality). Such experiences might not be tapped into by measures used in the present study, which asked about events that were motivated by prejudice. It should also be noted that concealment of one's status as transgender may have a different meaning and implications to hiding one's sexual orientation. Qualitative research suggests that some transgender individuals find "passing" to be affirmative of their gender identity (Sevelius, 2013). As such, it is somewhat unsurprising that controlling one's appearance and voice for concealment purposes is associated with less rumination, at least when controlling for other proximal stressors. Future research should undertake a more fine-grained investigation of the meanings and implications of concealment for transgender individuals, and whether this necessitates adjustments to Hatzenbuehler's (2009) and Meyer's (2003) frameworks for this group.

The results regarding the other three minority stressors are in line with the majority of previous studies on minority stress in transgender individuals, which have consistently found prejudice events and expectations of rejection to be positively associated with distress and, for the most part, found self-stigma to be associated with distress as well (Bockting et al., 2013; Breslow et al., 2015; Gamarel et al., 2014; Nemoto et al., 2011; Tebbe & Moradi, 2016; Testa et al., 2015). This research expands upon these studies by finding these associations to be significant and positive even when controlling for each other minority stressor. Indeed, the cross-sectional associations between minority stressors and distress in transgender individuals appear to be relatively well-established now. As such, longitudinal research may be warranted at this stage to determine the temporal direction of these relationships.

The relationship between expectations of rejection and psychological distress was fully accounted for by rumination, in that there was no direct path from expectations of rejection to distress in the final model. However, direct paths remained from both prejudice events and self-stigma to distress and from prejudice events to rumination, indicating that these relationships were only partially accounted for. Thus, there may be direct effects of prejudice events and/or self-stigma on psychological distress in transgender individuals in addition to the indirect effects identified here. Furthermore, there may be other, not yet identified mediators of these relationships. Indeed, studies on sexual minority individuals have similarly found that rumination can only partially explain the relationships between minority stressors and distress and have found concurrent indirect effects of stressors on distress via various forms of maladaptive coping (Liao et al., 2015; Szymanski et al., 2014). Nonetheless, these findings suggest that rumination could be an important factor in the development of stigma-induced distress in transgender individuals. This dovetails with research that has found that transgender individuals ruminate with specific focus on their gender identity and expands upon previous work which has generally neglected this construct (Bauerband & Galupo, 2014).

Importantly, this study suggests that most paths in the model are far from trivial. By Cohen's (1988) standards, there was a large overall effect of prejudice events on distress and a medium to large overall effect of self-stigma on distress. Additionally, though there are no agreed upon standards for small, medium and large indirect effects, Kenny (n.d.) suggests that .01, .09, and .25 should be used respectively. Thus, the effects of prejudice events on distress via self-stigma and expectations of rejection, as well as the effects of expectations of rejection and self-stigma on distress via rumination, could be seen as medium to large. However, the indirect effect of prejudice events on distress via rumination and all effects on distress involving active

concealment could be seen as having little practical significance, due to their small to medium sizes.

If replicated in prospective studies, these findings may have practical implications for the amelioration of psychological distress in transgender individuals. Firstly, the finding that there is a relationship between minority stressors and psychological distress, whether or not gender dysphoria is controlled for, suggests that gender affirming medical treatments (e.g. hormone therapy or gender affirmation surgery) may benefit from supplemental psychological interventions which specifically target the added burden of minority stress, in a similar vein to those being developed for sexual minority individuals (Pachankis et al., 2015). Secondly, the finding that there was an indirect effect of expectations of rejection on distress via rumination and no direct relationship implies that rumination-focused interventions (e.g. Watkins et al., 2011) may be useful in addressing distress associated with expectations of rejection. Finally, the finding that the paths from self-stigma and prejudice events to psychological distress were only partially accounted for by indirect effects suggest clinicians may want to consider developing interventions that specifically target self-stigma and policy makers should continue to directly address societal transphobia. Notably, there are many interventions that specifically target sexual orientation self-stigma that may be adaptable to incorporate internalized transphobia and an intervention attempting to reduce transphobia in the general population has shown promising results (Berg, Munthe-Kaas, & Ross, 2016; Broockman & Kalla, 2016).

### **Limitations**

The present study's findings must be considered in the context of a number of limitations. Firstly, the data were cross-sectional, meaning that direct tests of causality or temporal direction of relationships were not possible. This is a particularly pertinent issue, as distressed participants

could be more likely to recall prejudice events (Gotlib & Joormann, 2010). Thus, readers should view these results as important exploratory analyses to inform future prospective studies which can better test causal pathways. Secondly, as data were taken online, participants were self-selected, and so the sample may not be representative of either the general or clinical transgender population. However, our sample of transgender participants is well characterized using multiple measures compared to prior studies which used single items or simple self-reported affirmation as transgender (e.g. Bockting et al., 2013). Nevertheless, a clinical measure of gender dysphoria was not included, which requires addressing in further work.

Another limitation is that this study did not attempt to distinguish minority stressors based on whether they were related to sexual orientation or transgender status. This was by design, due to the high numbers of transgender individuals who identify as sexual minority and the potential for transgender individuals to experience sexual orientation stigma regardless of their actual sexual orientation. However, this precluded testing whether there were separate effects of sexual and gender minority stressors on distress, which may be important for designing psychological interventions which target these variables. As such, future studies should utilize separate measures of sexual and gender minority stressors in order to measure the independent effects of each on the mental health of transgender individuals.

Furthermore, several included measures were developed specifically for this study. However, each demonstrated acceptable internal consistency and expected relationships with related constructs (indicating validity). Additionally, this research was not focused on transgender individuals resident in a specific country, of a particular race/ethnicity or of a particular SAAB and/or gender identity (man, woman or non-binary). The broad recruitment strategy used here did facilitate the collection of a sample sufficiently large enough to test the

hypothesized model. However, the observed relationships may differ across cultural and structural variations in stigma and these subgroups may experience and react to stigma in very different ways. Notably, a large majority of participants were White and non-Latino/Hispanic, and so it is particularly unclear to what degree these results are generalizable beyond White transgender individuals in Western countries. Finally, it is possible for yet additional unmeasured variables to account for some of the observed associations. These may include genetic factors or early environmental experiences associated with both transgender status and mental health.

### **Conclusion**

In conclusion, this study provides initial evidence for indirect effects of prejudice events on distress via proximal stressors and indirect effects of proximal stressors on distress via rumination in transgender people. Practical implications include the potential for interventions targeting expectations of rejection, self-stigma and/or rumination to ameliorate the deleterious effects of transphobia on transgender well-being. Results should be interpreted with caution as the study suffers from limitations, particularly its use of a cross-sectional design. Researchers are encouraged to investigate these relationships in future studies using research designs that facilitate causal and temporal direction testing.

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Table 1

*Bivariate Correlations and Descriptive Statistics for Manifest Variables.*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. HRD	—																	
2. Victim	.61***	—																
3. MAs	.65***	.42***	—															
4. Conceal	.28***	.13***	.27***	—														
5. ACs	.34***	.19***	.38***	.43***	—													
6. VfOS	.30***	.20***	.33***	.51***	.63***	—												
7. SOSS	.17***	.07*	.16***	.23***	.29***	.28***	—											
8. GISS	.16***	.03	.26***	.33***	.36***	.31***	.48***	—										
9. Rum	.26***	.10***	.34***	.23***	.43***	.31***	.25***	.35***	—									
10. Dep	.34***	.20***	.37***	.24***	.37***	.29***	.28***	.36***	.57***	—								
11. Anx	.34***	.21***	.39***	.22***	.42***	.30***	.25***	.32***	.60***	.78***	—							
12. WB	-.27***	-.11***	-.30***	-.23***	-.39***	-.25***	-.27***	-.35***	-.50***	-.73***	-.68***	—						
13. Age	-.01	.16***	-.22***	-.06	-.20***	-.13***	-.13***	-.18***	-.30***	-.27***	-.26***	.26***	—					
14. AFAB	-.02	-.15***	.09***	-.15**	-.01	-.09**	.03	.07*	.02	.00	.02	.04	-.25***	—				
15. Race	.05	-.02	.04	-.01	.02	.02	.05	.04	.03	.03	.02	-.05	-.11***	-.07*	—			
16. NBG	-.08**	-.07**	-.07*	-.40***	-.12***	-.20***	-.01	.02	.07*	.02	.04	-.06	-.20***	-.25***	.03	—		
17. GIO	.14***	.19***	-.02	.13***	-.09**	.00	-.18***	-.26***	-.19***	-.19***	-.16***	-.22***	.38***	-.14***	-.08**	-.48***	—	
18. Dysph	.18†	.15†	.12†	.12†	.17†	.23†	-.01†	.04†	.02†	.08†	.07†	-.11†	.14†	-.18†	-.09†	-.73†	.39†	—
Descriptive Statistics																		
<i>M</i>	2.04	.88	2.77	2.82	3.97	2.74	1.67	2.53	2.65	12.05	10.15	5.21	28.50	—	—	—	2.56	5.86
<i>SD</i>	.88	.77	.80	1.25	1.35	1.15	.79	1.06	.73	7.43	6.00	2.10	11.74	—	—	—	.92	1.46
Range	1-6	0-3	1-5	1-5	1-6	1-5	1-5	1-5	1-4	0-27	0-21	0-10	16-78	—	—	—	1-4	1-7

*Note.* HRD = Heterosexist Harassment, Rejection, and Discrimination Scale, Victim = Victimization, MAs = Microaggressions, Conceal = Active Concealment, ACs = Acceptance

Concerns, VfOS= Vigilance for Others' Suspicions, SOSS = Sexual Orientation Self-Stigma, GISS = Gender Identity Self-Stigma, Rum = Rumination, Dep = Depression, Anx = Anxiety,

WB = Well-Being, AFAB = Assigned Female at Birth, Race = Non-White and/or Latino, NBG = Non-Binary Gender, GIO = Gender Identity Outness, Dysph = Gender Dysphoria.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ , †polychoric/polyserial correlation,  $p$  not calculated

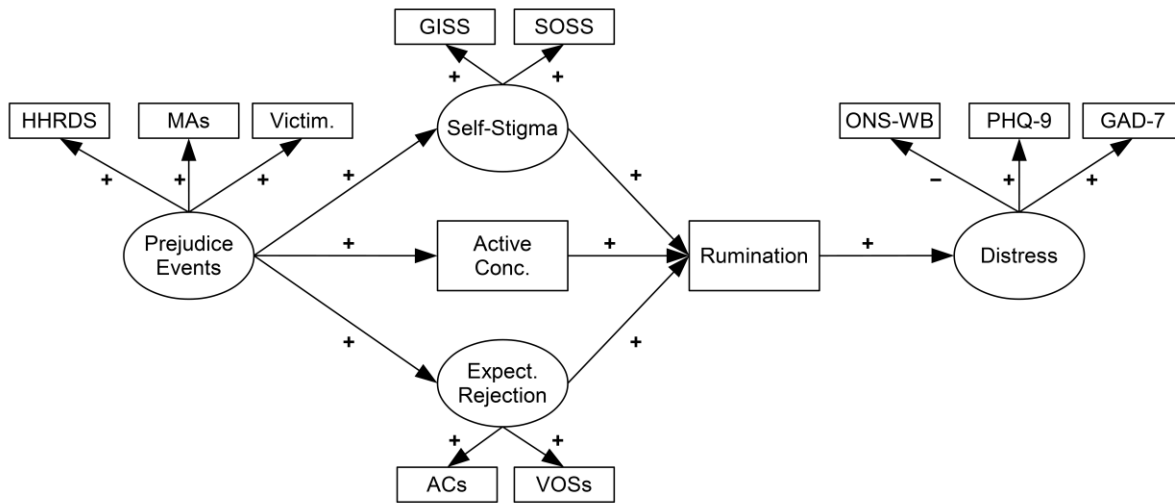
Table 2

*Direct and Indirect Effects on Psychological Distress*

Indirect Path	A	B	C	Indirect
Single Mediator Models				
Prejudice events via active concealment	.33***	.11**	.46***	.04***
Prejudice events via self-stigma	.33***	.39***	.36***	.13***
Prejudice events via ERs	.51***	.34***	.32***	.17***
Multiple Mediator Model				
Prejudice events via active concealment	.33***	-.09**	.31***	-.03***
Prejudice events via self-stigma	.33***	.33***		.11***
Prejudice events via Expectations of Rejection	.52***	.21***		.11***
Full Model				
Active concealment via rumination	-.10**	.47***	—	-.05**
Self-stigma via rumination	.27***		.22***	.13***
ERs via rumination	.28***		—	.13***
Prejudice events via rumination	.17**		.25***	.08***

*Note.* A = path from independent variable to intermediary variable, B = path from intermediary variable to distress, C = remaining direct path from independent variable to distress, Indirect = indirect path from independent variable to distress. Blank cells are redundant. Dashed cells represent deleted paths. ERs = Expectations of Rejection.

\*\*  $p < .01$ , \*\*\*  $p < .001$ .



*Figure 1.* Hypothesized model. Paths predicted to be positive are marked with a (+) and paths predicted to be negative are marked with a (-). HHRDS = Heterosexist Harassment, Rejection, and Discrimination Scale, Victim. = Victimization, SOSS = Sexual Orientation Self-Stigma, GISS = Gender Identity Self-Stigma, Active Conc. = Active Concealment, Expect. Rejection = Expectations of Rejection, ACs = Acceptance Concerns, VOSs = Vigilance for Others' Suspensions, ONS-WB = ONS Well-Being measure, PHQ-9 = Patient Health Questionnaire 9-item scale (Depression), GAD-7 = Generalised Anxiety Disorder 7-item scale.

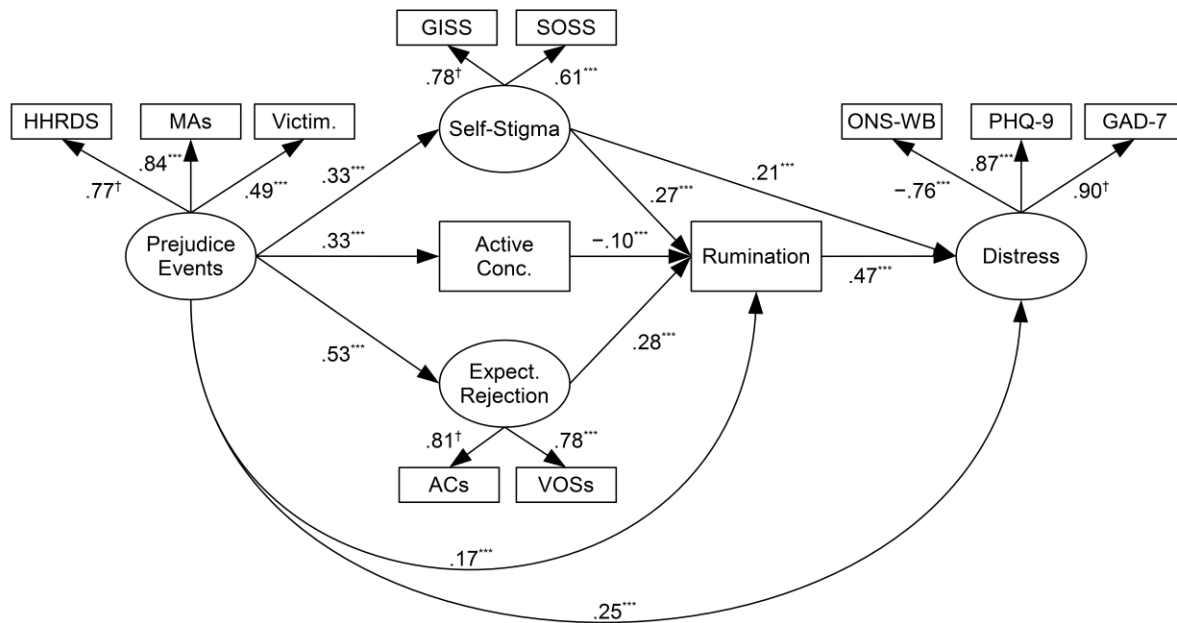


Figure 2. Final model. Error terms and correlations between error terms excluded for coherence.

HHRDS = Heterosexist Harassment, Rejection, and Discrimination Scale, Victim. =

Victimization, GISS = Gender Identity Self-Stigma, SOSS = Sexual Orientation Self-Stigma,

Active Conc. = Active Concealment, Expect. Rejection = Expectations of Rejection, ACs =

Acceptance Concerns, VOSs = Vigilance for Others' Suspicions, ONS-WB = ONS Well-Being

measure, PHQ-9 = Patient Health Questionnaire 9-item scale (Depression), GAD-7 =

Generalised Anxiety Disorder 7-item scale.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ ,  $^{\dagger}p$  not calculated as path constrained to be equal to 1.